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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| HUTCHISON LAW GROUP PLLC PO BOX 31686 RALEIGH, NC 27612 | | | EXAMINER SCHLIENTZ, NATHAN W | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | |
|------------------------------|---------------------|----------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/537,182 | CHRISSTOFFELS ET AL. |
| | Examiner | Art Unit |
| | Nathan W. Schlientz | 1616 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS/WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 01 June 2005.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 14-31 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 14-31 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date 10/24/05.

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application
 6) Other: _____.

DETAILED ACTION

Status of Claims

Claims 1-13 were cancelled and claims 14-31 were newly added in a preliminary amendment filed 1 June 2005. As a result, claims 14-31 are pending and are thus examined herein on the merits for patentability. No claim is allowed at this time.

Claim Rejections - 35 USC § 112, First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 14-31 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for pyraclostrobin and epoxiconazole, does not reasonably provide enablement for all active compounds for the treatment of plants. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Attention is directed to *In re Wands*, 8 USPQ2d 1400 (CAFC 1988) at 1404 where the court set forth the eight factors to consider when assessing if a disclosure would have required undue experimentation. Citing *Ex parte Forman*, 230 USPQ 546 (BdApls 1986) at 547 the court recited eight factors:

- 1) the nature of the invention
- 2) the state of the prior art

- 3) the relative skill of those in the art
- 4) the predictability of the art
- 5) the breadth of the claims
- 6) the amount of direction or guidance provided
- 7) the presence or absence of working examples
- 8) the quantity of experimentation necessary

The instant specification fails to provide guidance that would allow the skilled artisan to practice the instant invention without resorting to undue experimentation, as discussed in the subsections set forth herein below.

The nature of the invention

The claimed invention relates to a composition comprising at least one active compound for the treatment of plants and a copolymer comprising N-vinylamide and an ester of an ethylenically unsaturated carboxylic acid.

The state of the prior art

It is well known in the art to combine plant growth regulators, fertilizers, pre- and post- emergent herbicides, pesticides, fungicides, nematocides, etc. with polymer matrices in order to increase the dissolution, dispersibility, and stability of active compounds.

The predictability of the art

However, varying active compounds have different chemical and physical properties. Therefore, it is not possible to predict the bioefficacy of an active compound within a polymer matrix due to the differing physical and chemical properties of the various active compounds. U.S. Patent No. 5,019,998 discloses that not all combinations of polymer carriers and chemical actives are compatible for controlled release (column 8, lines 26-60).

The breadth of the claims

The claims are very broad in that they are drawn to any active compound for the treatment of plants. This broad recitation encompasses a plethora of species with varying physical and chemical properties.

The amount of direction or guidance provided

The instant specification does not provide direction or guidance with respect to determining the ability and bioefficacy of incorporating all such active compounds into a polymer matrix.

The presence or absence of working examples

The specification does however provide a working example wherein pyraclostrobin and epoxiconazole are incorporated within a copolymer of vinylpyrrolidone/Lutensol AT25MA (Reference Examples 1 and 2, and Example 1).

The quantity of experimentation necessary

To determine the bioefficacy of other active compounds for the treatment of plants with a copolymer comprising N-vinylamide and at least one ester of an ethylenically unsaturated carboxylic acid would require undue experimentation in order to determine the compatibility, solubility, dispersibility, and bioefficacy of a plethora of species with varying chemical and physical properties.

Therefore, for the aforementioned reasons, the Applicant is enabled for pyraclostrobin and epoxiconazole, but is not reasonably enabled for all active compounds for the treatment of plants.

Claim Rejections - 35 USC § 112, Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 14-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, claims 14 and 17 recite the term "general formula". However, it is recommended to replace the term "general formula" with the term "formula", because a general formula is indefinite with respect to the metes and bounds of the claims. The term general is defined as, "Not limited in scope, area, or application. Not limited to or dealing with one class of things; diversified." Therefore, it is not clear if the formulas are limited to the recited elements or encompass elements not recited. Claims 15-16 and 18-31 are also indefinite because they are directly or indirectly dependent from claim 14 and thus encompass all the limitations of said claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1,148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 14-16, 18-28 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/37285 (hereinafter Narayanan et al.).

Applicant claims:

Applicants claim a composition comprising at least one active compound for the treatment of plants and at least one copolymer comprising at least one N-vinylamide, at least one ester of an ethylenically unsaturated carboxylic acid wherein the alkoxylate portion of the ester exhibits the formula (I), and optionally at least one additional copolymerizable comonomer. Applicants also claim a method of treating plants for various reasons via applying the said composition.

Determination of the scope and content of the prior art

(MPEP 2141.01)

Narayanan et al. teach a composition comprising an active chemical and a particulate polysaccharide matrix having improved water dispersibility and dispersion stability in aqueous solutions by the incorporation of an N-vinyl lactam monomer and a hydrophobic comonomer, wherein the composition is useful in pre- and post- emergent

agrochemical formulations (abstract; page 2, lines 1-6 and 13-19; page 5, lines 21-26; page 6, lines 12-16; and claims 1 and 18).

Ascertainment of the difference between the prior art and the claims

(MPEP 2141.02)

Narayanan et al. do not explicitly teach their copolymer comprising at least one N-vinylamide, at least one ester of an ethylenically unsaturated carboxylic acid wherein the alkoxylate portion of the ester exhibits the formula (I), and optionally at least one additional copolymerizable comonomer.

However, Narayanan et al. do teach a composition comprising an active chemical and a particulate polysaccharide matrix having improved water dispersibility and dispersion stability in aqueous solutions by the incorporation of an N-vinyl lactam monomer and a hydrophobic comonomer, wherein the N-vinyl lactam monomer is preferably N-vinyl pyrrolidone or mixtures of N-vinyl pyrrolidone and N-vinyl caprolactam (page 3, lines 2-7), and the hydrophobic comonomer is a polymerizable compound containing an olefinically unsaturated group, such as lower alkylamino lower alkyl acrylates and methacrylates, lower alkyl vinyl ethers, and mixtures of these compounds, wherein alkylamino alkylmethacrylates are preferred (page 3, lines 8-12 and 16-24). Narayanan et al. further teach that the concentration of the N-vinyl lactam monomer with respect to the hydrophobic component in the copolymer can vary between about 60 and about 98.5 wt.%, preferably between about 70 and about 95 wt.%, and that the weight ratio of N-vinyl lactam to hydrophobic comonomer is preferably between about 4:1 and 8:1 (page 4, lines 1-12).

Furthermore, Narayanan et al. teach explicit examples of compositions comprising 98:2 and 80:20 ratios of N-vinyl pyrrolidone and dimethylamino ethyl methacrylate (page 11, Examples 5 and 6). Narayanan et al. also teach that the modified matrix provides compatibility with a wide variety of conventional agrochemical agents including plant growth regulants, fertilizers, pre- and post- emergent herbicides, pesticides, fungicides, nematocides, etc. (page 5, lines 21-26, and page 6, lines 12-16).

Finding of *prima facie* obviousness

Rational and Motivation (MPEP 2142-43)

Therefore, it would have been *prima facie* obvious for one skilled in the art at the time of the invention to formulate a composition for treating plants comprising a plant growth regulants, fertilizers, pre- and post- emergent herbicides, pesticides, fungicides or nematocides, at least one N-vinyl pyrrolidone, at least one lower alkylamino lower alkyl acrylate or methacrylate, and optionally at least one lower alkyl vinyl ether, as reasonably taught by Narayanan et al.

It is noted by the examiner that Narayanan et al. do not explicitly teach the lower alkylamino lower alkyl acrylates or methacrylates to comprise 3 to 40 carbons as the lower alkylamino group, as in formula (I). However, the teaching of lower alkylamino by Narayanan et al. overlaps with the instant claims, and it would be well within the purview of one skilled in the pertinent art at the time of the invention to use any lower alkylamino group for the lower alkylamino lower alkyl acrylates or methacrylates taught by Narayanan et al.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

2. Claims 17 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Narayanan et al. in view of U.S. Patent No. 3,966,902 (hereinafter Chromecek).

Applicant claims:

Applicants claim a composition according to claim 14, wherein the carboxylic acid esters exhibit ethoxylate residues of the formula (Ia), and a method of treating plants by applying said composition.

Determination of the scope and content of the prior art

(MPEP 2141.01)

Narayanan et al. teach a composition comprising an active chemical and a particulate polysaccharide matrix having improved water dispersibility and dispersion stability in aqueous solutions by the incorporation of an N-vinyl lactam monomer and a hydrophobic comonomer, wherein the composition is useful in pre- and post-emergent agrochemical formulations, as discussed above.

Ascertainment of the difference between the prior art and the claims

(MPEP 2141.02)

Narayanan et al. do not teach the hydrophobic comonomer to comprise the carboxylic acid esters of formula (la). However, Chromecek teaches compositions comprising a polymer complex carrier and an active ingredient, such as insecticides, pesticides and herbicides, entrapped therein (column 1, lines 8-10 and 16-19). Chromecek teaches that copolymers have certain desirable physical, optical and physiological properties (column 1, lines 38-48). Chromecek teaches the polymers comprising monomer materials such as hydroxyl ethylacrylate or methacrylate, monomethacrylates of glycol, glycerol, and of other polyhydric alcohols, monomethacrylates of dialkylene glycols and polyalkylene glycols, hydroxyl propylacrylate or methacrylate, pentaethylene glycol acrylate or methacrylate, diethylaminoethyl acrylate or methacrylate, dimethylaminoethyl acrylate or methacrylate, dimethylaminopropyl acrylate or methacrylate, alkoxyalkyl acrylates or methacrylates, etc. (column 2, lines 1-68; and column 3, lines 1-6). Furthermore, Chromecek teaches that by appropriate choice of the starting monomers and also of the concentration of the monomer in the reaction mixture, polymers having a very broad range of physical and chemical properties may be obtained (column 3, lines 11-18).

Finding of *prima facie* obviousness

Rational and Motivation (MPEP 2142-43)

Therefore, it would have been *prima facie* obvious for one skilled in the art at the time of the invention to adjust the copolymer matrix of Narayanan et al. by using

alkoxyalkyl acrylates or methacrylates as the hydrophobic comonomer in order to optimize the physical and chemical properties thereof, as reasonably taught by Chromecek.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Schlientz whose telephone number is 571-272-9924. The examiner can normally be reached on 8:30 AM to 5:00 PM, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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